

been able to prove, experimentally its existence in the following British species :

1. *Nematus appendiculatus*.—Females bred.
2. *Nematus ruficornis*.—Eggs were laid, but the larvæ died very young.
3. *Nematus compressicornis*.—Eggs were laid, but did not develop ; they were, however, certainly fertile.
4. *Nematus cadderensis*.—Males bred.
5. *Nematus conductus*.—Females bred.
6. *Cræsus septentrionalis*.—Males bred.
7. *Cræsus varus*.—One female bred.
8. *Cladius padi*.—Males bred.
9. *Cladius rufipes*.—Eggs laid, but did not yield the larvæ.
10. *Abia nitens*.—Males bred.
11. *Trichiosoma lucorum*.—Males bred.
12. *Hylotoma ustulata*.—Eggs laid, but the larvæ perished in them.
13. *Lophyrus pini*.—Males bred.

Glasgow : September 15th, 1884.

A SYNOPSIS OF THE CENTRAL AMERICAN SPECIES OF *JOPPA* WITH DIAGNOSES OF NEW SPECIES.

BY P. CAMERON.

The following new species will be more fully described in Messrs Godman and Salvin's "Biologia Americana-Centrali."

JOPPA MELANOCEPHALA.

Flavo-testacea ; capite, antennis, abdominis apice tarsisque posterioribus nigris ; alis flavo-hyalinis, apice violaceis, stigmatе flavo.

Long. 21—22 mm.

Hab. : Panama, Volcan de Chiriqui, 2500—4000 feet ; Bugaba 800—1200 feet (*Champion*).

JOPPA VARIPES.

Flavo-testacea, antennis, vertice, abdominis apice, tarsis, femoribus proparte tibiarumque apice nigris ; alis flavo-hyalinis, apice fumatis stigmatе flavo.

Long. 11—12 mm.

Hab. : Panama, Volcan de Chiriqui, 2500—6000 feet (*Champion*).

JOPPA MELANOSTIGMA.

Flava, antennis, vertice, mesonoto, abdominis apice, geniculis posterioribus læte tarsisque posterioribus nigris ; alis flavo-hyalinis, apice fumatis, stigmatе nigro.

Long. 14 mm.

Hab. : Bugaba (*Champion*).

JOPPA XANTHOSTIGMA.

Flava, antennis, vertice, mesonoto, mesosterno, abdominis apice, tarsis posterioribus tibiis et posticis apice nigris; alis flavis, apice fumatis, stigmate flavo, ♂. Long. 13 mm.

Hab.: Cache, Costa Rica (*Rogers*).

JOPPA MACULICORNIS.

Flava, antennis, capite postice, mesonoto, mesopleuris, metanoti basi, abdominis apice, tarsis posterioribus femoribusque posterioribus, dimidio apicali nigris; antennarum medio annulo albo; alis nigris, medio flavo-yalinis. Long. 12 mm.

Hab.: Volcan de Chiriqui, 4000—6000 feet, in Panama (*Champion*).

JOPPA NIGRICEPS.

Nigra, metathorace, abdominis segmentis 1—2, coxis, trochanteribus, femoribus tibiisque proparte, flavis; alis violaceis, albo-maculatis.

Long. 18—19 mm.

Hab.: Volcan de Chiriqui, Vera Paz (*Champion*).

JOPPA ROGERSI.

Differs from *J. nigriceps* in the scutellum not being raised into a sharp peak in the centre, it being flat along its entire extent, and traversed by two or three carinæ; in the 3rd abdominal segment being shorter than all the succeeding segments, it being longer than them in *J. nigriceps*, in the metathoracic areas being all clearly defined, and the pronotum not transversely striated.

Hab.: Irazu, 6000—7000 feet, Costa Rica (*H. Rogers*).

JOPPA GENICULATA.

Nigro-violacea, facie, metapleuris, abdominis segmentis 1—2, coxis, trochanteribus, femoribus tibiisque proparte flavis; alis violaceis, albo-fasciatis.

Long. 16—18 mm.

Hab.: Gubilguitz, Vera Paz and Volcan de Chiriqui (*Champion*).

JOPPA XANTHOSTOMA.

Nigra, ore, palpis, metathorace, coxis, trochanteribus, femoribus proparte, tibiis anterioribus proparte posticisque (basi excepto) flavis; alis violaceis, albo-fasciatis.

Long. 20—22 mm.

Hab.: Guatemala and Panama.

Joppa eleganter, Smith, and *J. pulchripennis*, Smith, are referable

to *Trogus*; the former = *Trogus blandita*, Cresson. *Joppa maculosa*, Smith, may be referred to *Ichneumon*.

SYNOPSIS OF THE SPECIES.

- 1 (9) Mesonotum without black.
- 2 (8) Wings hyaline, black at base.
- 3 (4) Head entirely black MELANOCEPHALA, Cam.
- 4 (3) Head only black above.
- 5 (6) Hind coxæ entirely yellow, base of 2nd abdominal segment not black, extreme apex of hind tibiæ only black VARIPES, Cam.
- 6 (7) Hind coxæ entirely black, metanotum smooth, almost impunctate, abdomen longitudinally striated VARIOLOSA, Smith.
- 7 (6) Hind coxæ yellow, with two black spots, abdomen longitudinally aciculate, metathorax longitudinally striated ELEGANTULA, Cresson.
- 8 (2) Wings entirely black FUMIPENNIS, Cresson.
- 9 (1) Mesonotum marked with black.
- 10 (11) Wings entirely yellow ... ALTERNANS, Brullé.
- 11 (12) Wings yellowish, a small fascia at base of radial cellule, metathorax with two short spines behind, petiole black SUTURALIS, Brullé
- 12 (15) Wings yellowish, the apex smoky.
- 13 (14) Apex of tibiæ and stigma black MELANOSTIGMA, Cam
- 14 (13) Apex of tibiæ and stigma yellow XANTHOSTIGMA, Cam
- 15 (22) Wings yellowish, the base and apex black.
- 16 (19) Pleuræ entirely yellow.
- 17 (18) Scutellum and base of metathorax black DECORATA, Cresson
- 18 (17) Scutellum and base of metathorax yellow INCERTA, Cresson
- 19 (16) Mesopleuræ black.
- 20 (21) Apex of hind femora black, apex of tibiæ yellow MACULICORNIS, Cam
- 21 (20) Apex of hind femora yellow, tibiæ broadly black HILARIS, Smitl
- 22 (27) Wings violaceous, the middle more or less hyaline.
- 23 (26) Pro-, meso-thorax, and head black, femora broadly black.
- 24 (25) Scutellum flat in centre, 3rd abdominal segment shorter than all the succeeding together ROGERSI, Car
- 25 (24) Scutellum sharply peaked, 3rd abdominal segment longer than all the succeeding together..... NIGRICEPS, Car
- 26 (23) Pronotum and pleuræ yellow, hind knees only black MODESTA, Smit
- 27 (22) Wings hyaline, apex and one or two fasciæ in the centre black.
- 28 (33) Mesonotum entirely black.
- 29 (30) Pleuræ entirely yellow, hind knees only black..... CHIRIQUENSIS, Ca
- 30 (29) Pleuræ entirely black, femora broadly black.
- 31 (32) Metanotum black, a small fascia in middle of hind-wings... GENICULATA, Ca
- 32 (31) Metanotum yellow, no fascia in hind-wings XANTHOSTOMA, Ca
- 33 (28) Mesonotum yellow, with three black longitudinal lines, metanotum spotted with black SUMICHRASTI, Cress